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## **CLAIMS:**

- 1. A process for the preparation of polyolefins having a bi or multimodal molecular weight distribution comprising the steps of:
- (i) contacting olefin monomer and a first co-reactant with a catalyst system in a first continuously stirred reactor under first polymerisation conditions to produce a product comprising a first polyolefin having a first molecular weight distribution; and
- (ii) contacting olefin monomer and a second co-reactant with a catalyst system in a second continuously stirred reactor under second polymerisation conditions to produce a product comprising a second polyolefin having a second molecular weight distribution that is different from the first molecular weight distribution; wherein the first and second continuously stirred reactors are connected in series, and the first and second polyolefins are mixed together, and wherein one of the co-reactants is hydrogen and the other is a comonomer, and wherein each catalyst system comprises
- (a) a bis-tetrahydroindenyl catalyst component compound of the general formula:

## $(IndH_4)_2R^*MQ_2$

where each Ind is the same or different and is indenyl or substituted indenyl, R" is a bridge which comprises a C<sub>1</sub>-C<sub>4</sub> alkylene radical, a dialkyl germanium or silicon or siloxane, or an alkyl phosphine or amine radical, which bridge is substituted or unsubstituted, M is a Group IV metal or vanadium and each Q i ndependently is a hydrocarbyl having 1 to 20 carbon atoms or halogen.; and

- (b) an activating agent which activates the catalyst component.
- 2. A process according to claim 1, wherein the product of step (i), including the olefin monomer, is contacted with the second co-reactant and the catalyst system in

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step (ii) to produce and mix the second polyolefin with the first polyolefin in the second reaction zone.

- 3. A process according to claim 1, wherein each polyolefin is produced individually in a reactor and mixed together by extrusion.
- 4. A process according to any one of the preceding claims, wherein the olefin monomer is ethylene.
- 5. A process according to any one of the preceding claims, wherein the second correactant is hydrogen and the comonomer is hexene.
- 6. A process according to any one of the preceding claims, wherein the temperature of each reaction zone is in the range of from 60°C to 90°C.
- 7. A process according to any one of the preceding claims, wherein the activating agent which activates the catalyst component comprises an aluminium containing activating agent or a boron containing activating agent.
- 8. A process according to any one of the preceding claims, wherein the catalyst system further comprises an inert support.
- 9. A polyolefin having a bi or multimodal molecular weight distribution obtained by the process of any one of claims 1 to 8.
- 10. A polyolefin according to claim 9, wherein the polyolefin is polyethylene.